REMARKS

Claims 1-2, 4-14, 16, 20-25, 27, and 28 are currently pending in the subject application and are presently under consideration. Claims 1, 2, 8-10, 14, 25, 27, and 28 have been amended as shown on pages 2-8 of the Reply. New claims 29-32 have been added.

Applicants' representative thanks Examiner Chan for the courtesies extended during the telephonic interview conducted on May 10, 2010, and the follow up interview conducted on May 17, 2010. The participants discussed in particular the conditions set forth in the subject claims for performing a wakeup time synchronization. The Examiner agreed that these conditions did not appear to be disclosed by the cited references, and a set of amendments was agreed upon that the Examiner believed rendered these conditional aspects more clear. The Examiner indicated that an additional search would be performed in view of these amendments, and if no relevant art was found, allowance of the case may be expedited.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments herein.

I. Rejection of Claims 9-11, 13, 24, and 25 Under 35 U.S.C. §103(a)

Claims 9-11, 13, 24, and 25 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Ito, *et al.* (EP 1 089 578 A2) in view of Rotstein, *et al.* (US 6,289,228). It is respectfully submitted that this rejection should be withdrawn for at least the following reasons. Ito, *et al.* and Rotstein, *et al.*, individually or in combination, do not disclose or suggest all aspects set forth in the subject claims.

> To reject claims in an application under § 103, an examiner must establish a prima facie case of obviousness. A prima facie case of obviousness is established by a showing of three basic criteria. First, there must be some apparent reason to combine the known elements in the fashion claimed by the patent at issue (*e.g.*, in the references themselves, interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, or in the knowledge generally available to one of ordinary skill in the art). To facilitate review, this analysis should be made explicit. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when

combined) must teach or suggest all the claim limitations. See MPEP § 706.02(j). See also KSR Int'l Co. v. Teleflex, Inc., 550 U.S. 398, 04-1350, slip op. at 14 (2007). The reasonable expectation of success must be found in the prior art and not based on applicant's disclosure. See In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)

The present application relates generally to synchronization of the time when a first communications module, such as an Ultra-Wideband (UWB) module, performs a wakeup process to the time when a second communications (COMM) module performs a wakeup process in a multi-mode device. To this end, the time the next scheduled COMM wakeup process to be performed by the COMM module can be established. Once the time for the next scheduled COMM wakeup process has been established, the next UWB wakeup process can be synchronized to be performed by the UWB module at substantially the same time. According to one or more embodiments, the next UWB wakeup process is synchronized with the next COMM wakeup process if the next COMM wakeup process is scheduled to be performed before the next UWB wakeup process is scheduled to be performed (see, *e.g.*, paragraph [0013]). In particular, amended independent claim 9 recites, *determining a current communications time from a received pilot signal transmitted by a base station; determining a current UWB time from an internal clock in the UWB module; [and]* ***calculating a communications interval, the communications interval equaling a next communications wakeup time less the current communications time.***

The Examiner maintains that Ito, *et al.* combined with Rotstein, *et al.* discloses such a calculation. Applicants' representative respectfully disagrees. Ito, *et al.* relates to a mobile radio communication terminal designed to provide power to a minimum number of circuits necessary for execution of a selected operation mode (see Abstract). Asserting that Ito, *et al.* discloses calculating a communication interval equaling a next communications wakeup time less a current communications wakeup time, the Office Action indicates in particular the second embodiment described at paragraphs [0049]-[0052] of the cited reference. According to this embodiment, the operation time of the communication terminal's CPU is shortened by setting the wait operation period according to a Bluetooth (BT) system so that the period coincides with the wait operation

period according to a W-CDMA system (see paragraph [0049]). To this end, a wait period setting control means of the communication terminal supervises the leading edge of the wait operation period according to the W-CDMA system, and starts the wait operation according to the Bluetooth system in synchronization with the detection timing of the leading edge (see paragraph [0051] of Ito, *et al.*).

However, at no point during this process is a communication interval calculated comprising a next communications wakeup time less a current communications time. On page 3 of the Office Action, the Examiner appears to suggest that the "gap between the W-CDMA and BT wait operation" is equivalent to such a calculation. However, it is respectfully noted that *no such gap* is calculated in Ito, *et al.* Rather, the cited reference merely monitors for the leading edge of the W-CDMA wait operation, and *starts the BT wait operation in response to detecting this leading edge* (see at least paragraph [0051] and Figures 9 and 10). Since Ito, *et al.* discloses that the BT wait time is simply triggered in response to detecting the start of the W-CDMA wait time, there is no substantial "gap between the W-CDMA and BT wait operation" to be calculated.

Moreover, even assuming *arguendo* that such a gap existed in the system described in Ito, *et al.*, this gap would nevertheless fail to reasonably suggest a calculation comprising *a next communications wakeup time less a current communications time*. Such a calculation essentially results in a calculated time interval between the current communications time and the next communications wakeup time. Since neither the W-CDMA wait operation nor the BT wait operation represent a *current* time (until the moment when those respective wait operations begin), a gap between these two wait operations does not result in the time interval calculated according to independent claim 9. Indeed, Ito, *et al.* does not contemplate determining a next communications wakeup time (or wait time) in any context, since the cited reference merely responds to detection of the W-CDMA wait time *when the leading edge of this wait time occurs*. Consequently, there is no motivation in Ito, *et al.* to look ahead to a *next* communications wakeup time for any reason, much less to employ such next communications wakeup to *calculate a communications interval equaling the next communications wakeup time less the current communications time*.

It is further noted that, despite the Examiner's reference to the "gap between W-CDMA and BT wait operation" discussed above, it is nevertheless conceded on page 3 of the Office Action that Ito, *et al.* does not disclose calculation of the communications interval set forth in independent claim 9. The Examiner asserts that Rotstein, *et al.* remedies these deficiencies. Rotstein, *et al.* relates to a technique for conserving power consumption in a communication device by powering up only those portions of electrical circuitry needed to monitor paging channels indicating activity (see Abstract). According to this technique, a few bits of paging channel status information are punctured on a common pilot channel. These bits give an indication if there is any activity on the paging channels and which paging channels are active. The communication device periodically polls the pilot channel to check these bits. Based on the status of the bits, the communication device only performs paging channel processing if there is an active paging channel, and only on those paging channels indicating activity (see column 4, lines 50-58).

With regard to the calculation of the communications interval of independent claim 9, the Office Action again indicates that, in a typical slotted paging mode CDMA system as described in Rotstein, *et al.*, a communication device wakes up prior to receiving a paging message to acquire the aforementioned pilot channels (column 9, lines 20-31). However, the Examiner again neglects to explain how the mere observation that such a wakeup can occur in a CDMA system suggests *calculation of a communications interval equaling a next communications wakeup time less the current communications time*. Absent such an explanation, it is unclear how the wake up procedure described in Rotstein, *et al.* would lead one of ordinary skill to the act of calculating an interval equaling a next communications wakeup time less the current communications time, since the cited reference does not look forward to a *next* communications wakeup time for any reason, much less to subtract a current communication time from this next communications wakeup time.

Independent claim 9 goes on to recite, *synchronizing a new UWB wakeup time to the next communications wakeup time if the current UWB time plus the communications interval is less than a next UWB wakeup time*. Since Ito, *et al.* and Rotstein, *et al.* do not disclose or suggest calculation of the communications interval recited in independent

claim 9, as discussed above, it follows that the cited references also fail to disclose synchronizing a new UWB wakeup time to the next communications wakeup time *if the current UWB time plus the communications interval is less than a next UWB wakeup time*. With regard to synchronization of wakeup times based on such criteria, the Office Action again indicates the synchronization of W-CDMA and BT wait times described in Ito, *et al.* However, as noted *supra*, Ito, *et al.* does not make this synchronization conditional on *whether a current UWB time plus the aforementioned communications interval is less than a next UWB wakeup time*. Indeed, as discussed above, Ito, *et al.* does not contemplate calculating the communications interval required to make this determination. Moreover, Ito, *et al.* does not look ahead to determine a *next* UWB wakeup time. Rather, the BT wait operation, relied upon by the Examiner to read on the aforementioned UWB wakeup time, is merely triggered in response to detection of the start of the W-CDMA wait time, and as such it is not necessary for Ito, *et al.* to anticipate when a *next* BT wait operation is scheduled to occur. Since Ito, *et al.* neither calculates the communication interval of independent claim 9, nor determines when a next UWB wakeup time is schedule to occur, it cannot be said that the cited reference reasonably suggests synchronizing a new UWB wakeup time to the next communications wakeup time *if the current UWB time plus the communications interval is less than a next UWB wakeup time*.

Combining the slotted paging mode wake up features of Rotstein, *et al.* with Ito, *et al.* does not render these aspects obvious, since the indicated portions of that reference merely state broadly that a wakeup will occur prior receiving a paging message. The slotted paging mode of Rotstein, *et al.* does not calculate a communications interval as set forth in independent claim 9, and thus does not indicate that a wakeup time synchronization can occur *if a current UWB time plus the communications interval is less than a next UWB wakeup time*.

Similarly, independent claim 25 recites, *means for performing a communications wakeup process at a next communications wakeup time; means for computing the next communications wakeup time; and means for* ***synchronizing a new Ultra-Wideband (UWB) wakeup time to the next communications wakeup time if the next***

communications wakeup time is earlier than a next UWB wakeup time. The cited references are silent regarding at least these features, as discussed *supra*.

Also, independent claim 14, from which claim 24 depends, recites, *a processor configured to* ***synchronize a new UWB wakeup time to the next communications wakeup time if the next communications wakeup time is earlier than a next UWB wakeup time.*** As noted above, the cited references are silent regarding at least these aspects

In view of at least the foregoing, it is respectfully submitted that Ito, *et al.* and Rotstein, *et al.*, individually or in combination, do not disclose or suggest all features of amended independent claims 9 and 25 (and all claims depending there from), and as such fail to render obvious the present application. It is therefore requested that this rejection be withdrawn.

II. Rejection of Claims 1, 2, 4-8, 12, 14, 16, 20-23, 27, and 28 Under 35 U.S.C. §103(a)

Claims 1, 2, 4-8, 12, 14, 16, 20-23, 27, and 28 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Ito, *et al.* in view of Rotstein, *et al.*, and further in view of Mayo, *et al.* (US 6,571,111). It is respectfully submitted that this rejection should be withdrawn for at least the following reasons. Ito, *et al.*, Rotstein, *et al.*, and Mayo, *et al.*, individually or in combination, do not disclose or suggest all features of the subject claims.

Independent claim 1 recites, *synchronizing a new wakeup time for the second communication module to the next wakeup time for the first communication module* ***if the next wakeup time for the first communication module is earlier than the next wakeup time for the second communication module***. As discussed in the previous section of the Reply, neither Ito, *et al.* nor Rotstein, *et al.* disclose or suggest synchronization of communication wakeup module times *if the next wakeup time for the first communication module is earlier than the next wakeup time for the second communication module*. Mayo, *et al.* does not cure these deficiencies. Mayo, *et al.* relates to a technique for reducing power consumption in a communications network that includes a plurality of limited power capacity devices. According to this technique, each device periodically

receives a timing signal from a transmitter external to the network, and a real-time clock in each device is synchronized to the periodically received timing signal. The awake and sleep periods of the devices are then synchronized based on this received signal (see column 2, lines 13-26).

However, like Ito, *et al.* and Rotstein, *et al.*, Mayo, *et al.* does not contemplate making a determination regarding whether a next wakeup time for a first communication module is earlier than a next wakeup time for a second module. The cited reference therefore fails to disclose or suggest synchronizing a new wakeup time for the second communication module to the next wakeup time for the first communication module contingent on such a determination.

Likewise, independent claim 2 recites, *synchronizing a new UWB wakeup time to the next communications wakeup time if the next communications wakeup time is earlier than the next UWB wakeup time*, and as discussed *supra*, the cited references are silent regarding at least these aspects.

Similarly, independent claim 14 recites, *a processor configured to* ***synchronize a new UWB wakeup time to the next communications wakeup time if the next communications wakeup time is earlier than a next UWB wakeup time***. None of Ito, *et al.*, Rotstein, *et al.*, or Mayo, *et al.* disclose or suggest at least these features.

Also, independent claim 27 recites, *synchronizing a new UWB wakeup time to the next communications wakeup time if the next communications wakeup time is earlier than a next UWB wakeup time*. As discussed above, the cited references are silent regarding at least these aspects.

New claim 29 recites, *calculating a next communications wakeup time based at least in part on a time period set by the wireless mobile unit; calculating a next UWB wakeup time; and* ***synchronizing a new UWB wakeup time to the next communications wakeup time if the next communications wakeup time is earlier than the next UWB wakeup time***. Ito, *et al.*, Rotstein, *et al.*, and Mayo, *et al.* fail to disclose or suggest at least these features, as noted above.

Moreover, claim 5 recites, *determining a communications interval, the communications interval equaling the next communications wakeup time less the current communications time*, while claim 6 recites, *synchronizing the new UWB wakeup time to*

the next communications wakeup time if the current UWB time plus the communications interval is less than the next UWB time. As noted in the previous section of the Reply, Ito, *et al.* and Rotstein, *et al.* fail to disclose at least these synchronization aspects. Mayo, *et al.* does not remedy these shortcomings, since that reference does not contemplate synchronization of communication modules *if a current UWB time plus the above-described communications interval is less than a next UWB time*. Claims 20 and 21 recite similar features, and are therefore also believed to be allowable.

In view of at least the foregoing, it is respectfully submitted that Ito, *et al.* and Rotstein, *et al.*, alone or in combination with Mayo, *et al.*, do not disclose or suggest all features of amended independent claims 1, 14, and 27 (and all claims depending there from), and as such fail to make obvious the present application. It is therefore requested that this rejection be withdrawn.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [QUALP837US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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